

## Low Profile SMD Type Crystal Units



### FEATURES

- Low cost
- Industry standard
- Wide frequency range
- Excellent aging
- Surface mount
- Compliant to RoHS directive 2002/95/EC


**RoHS**  
COMPLIANT

This part is a miniature AT cut strip crystal unit packaged for surface mounting.

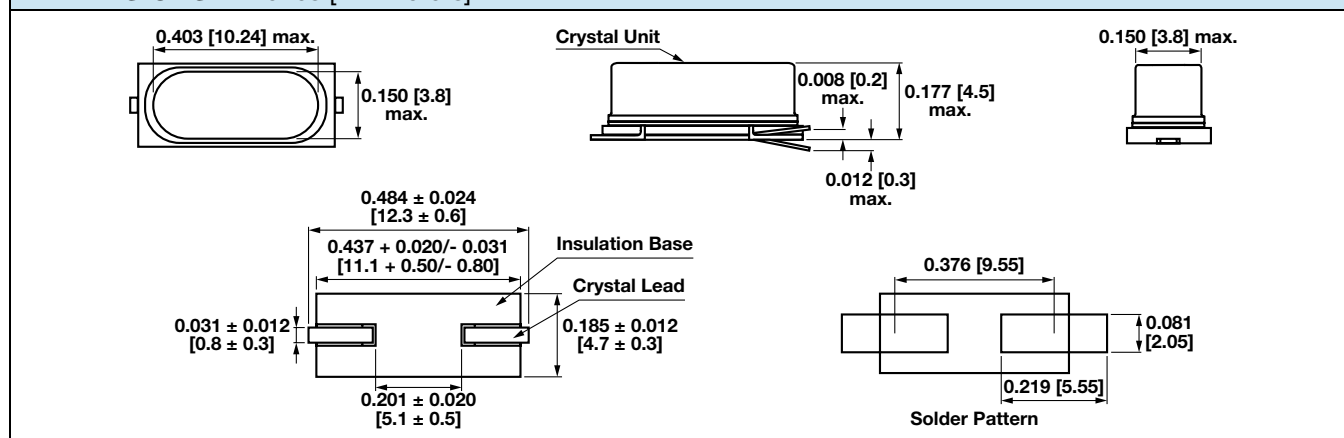
### STANDARD ELECTRICAL SPECIFICATIONS

| PARAMETER                   | SYMBOL         | CONDITION           | UNIT | MIN.     | TYP. | MAX.   |
|-----------------------------|----------------|---------------------|------|----------|------|--------|
| Frequency range             | $F_O$          |                     | MHz  | 3.579545 | -    | 66.000 |
| Frequency tolerance         | $\Delta F/F_O$ | at 25 °C            | ppm  | - 30     | -    | + 30   |
| Temperature stability       | $T_C$          | ref. to 25 °C       | ppm  | - 50     | -    | + 50   |
| Operating temperature range | $T_{OPR}$      |                     | °C   | - 10     | -    | + 70   |
| Storage temperature range   | $T_{STG}$      |                     | °C   | - 55     | -    | + 125  |
| Shunt capacitance           | $C_0$          |                     | pF   | -        | -    | 7      |
| Load capacitance            | $C_L$          | customer specified  | pF   | 10       | -    | series |
| Insulation resistance       | $I_R$          | 100 V <sub>DC</sub> | MΩ   | 500      | -    | -      |
| Drive level                 | $D_L$          |                     | μW   | -        | 100  | 500    |
| Aging                       | Fa             | at 25 °C, per year  | ppm  | - 5      | -    | + 5    |

### EQUIVALENT SERIES RESISTANCE (ESR) AND MODE OF VIBRATION (MODE)

| FREQUENCY RANGE (MHz) | MAX. ESR (Ω) | MODE           | FREQUENCY RANGE (MHz) | MAX. ESR (Ω) | MODE                     |
|-----------------------|--------------|----------------|-----------------------|--------------|--------------------------|
| 3.579 to 3.999        | 200          | fundamental/AT | 10.000 to 13.999      | 80           | fundamental/AT           |
| 4.000 to 4.999        | 150          | fundamental/AT | 14.000 to 39.999      | 50           | fundamental/AT           |
| 5.000 to 5.999        | 120          | fundamental/AT | 40.000 to 66.999      | 80           | 3 <sup>rd</sup> overtone |
| 6.000 to 9.999        | 100          | fundamental/AT |                       |              |                          |

### DIMENSIONS in inches [millimeters]



## ORDERING INFORMATION

|                       |                                                               |                                                                                   |                             |                                               |
|-----------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------|
| <b>XT49M</b><br>MODEL | <b>R</b><br>OTR<br>blank = standard<br>R = - 40 °C to + 85 °C | <b>-20</b><br>LOAD<br>blank = series<br>-20 = 20 pF<br>-30 = 30 pF<br>-32 = 32 pF | <b>20M</b><br>FREQUENCY/MHz | <b>e2</b><br>JEDEC LEAD (Pb)-FREE<br>STANDARD |
|-----------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------|

## GLOBAL PART NUMBER

|                                     |                   |                 |                   |                            |
|-------------------------------------|-------------------|-----------------|-------------------|----------------------------|
| <b>X</b> <b>T</b> <b>9</b> <b>M</b> | <b>2</b> <b>0</b> | <b>A</b>        | <b>N</b> <b>A</b> | <b>2</b> <b>0</b> <b>M</b> |
| MODEL                               | LOAD              | PACKAGE<br>CODE | OPTION            | FREQUENCY                  |

## GLOBAL PART NUMBERING

|                                                                     |                                                                                                      |                                                                                                                           |                                                                                                                                                      |                                                                                                                                                 |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>X</b> <b>T</b> <b>9</b> <b>S</b>                                 | <b>2</b> <b>0</b>                                                                                    | <b>A</b>                                                                                                                  | <b>N</b> <b>A</b>                                                                                                                                    | <b>4</b> <b>0</b> <b>M</b>                                                                                                                      |
| <b>MODEL NUMBER</b><br>XT9S = XT49S<br>XT9M = XT49M<br>XTU1 = XTUM1 | <b>LOAD CAPACITANCE</b><br>18 = 18 pF<br>20 = 20 pF<br>NL = series<br>to be specified by<br>customer | <b>PACKAGE CODE</b><br><b>Tape and reel</b><br>G = RF5 (XT9S)<br>H = RF7 (XT9M)<br><b>Bulk</b><br>A = B04<br>(all models) | <b>OPTIONS</b><br>NA = no additional<br>options<br>RR = extended<br>temperature<br>of - 40 °C to + 85 °C<br>Contact factory for<br>all other options | <b>FREQUENCY</b><br>4M = 4 MHz<br>40M = 40 MHz<br>100M = 100 MHz<br>12M288 = 12.288 MHz<br>M is used as<br>decimal place<br>holder in frequency |
| Example: XT49S-20 40M                                               |                                                                                                      |                                                                                                                           |                                                                                                                                                      |                                                                                                                                                 |
| <b>X</b> <b>T</b> <b>3</b> <b>6</b>                                 | <b>2</b> <b>0</b>                                                                                    | <b>A</b>                                                                                                                  | <b>1</b> <b>2</b> <b>M</b>                                                                                                                           |                                                                                                                                                 |
| <b>MODEL NUMBER</b><br>XT46 = XT46C<br>XT36 = XT36C                 | <b>LOAD CAPACITANCE</b><br>18 = 18 pF<br>20 = 20 pF<br>NL = series<br>to be specified by<br>customer | <b>PACKAGE CODE</b><br><b>Tape and reel</b><br>H = RF7<br><b>Bulk</b><br>A = B04<br>(all models)                          | <b>FREQUENCY</b><br>4M = 4 MHz<br>40M = 40 MHz<br>100M = 100 MHz<br>12M288 = 12.288 MHz<br>M is used as<br>decimal place<br>holder in frequency      |                                                                                                                                                 |
| Example: XT36C-20 12M                                               |                                                                                                      |                                                                                                                           |                                                                                                                                                      |                                                                                                                                                 |



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